GENERAL ELECTRIC
GENERAL ELECTRIC INFORMATION SYSTEMS ITALIA

GE 115/3 - 120 - 130
MPA SUBSYSTEM

CROSS REFERENCE

This publication is applicable for those products having the following product codes: .0897198 H - 0896014 B

This publication is composed of 2 volumes termed as follows :

Volume 1	T.o.C.	4.572.2.002.2
Description Installation Maintenance		
Parts	See U.C.	
Volume 2F	T.o.C.	4.572.2.003.2
Subsystem Schematics		

Product composition by single unit and manufacturing level :

4.040.0.707. ☐
4.040.0.765. ☐

3.8.1970

GENERAL ELECTRIC
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GE 115/3 - 120 - 130

SOTTOSISTEMA M.P.A.

INDICE DI RIFERIMENTO

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Descrizione
Installazione
Manutenzione
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GE 115/3 - 120 - 130

MPA SUBSYSTEM

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. MPA Subsystem - Maintenance 4.572.4.001. /A

GE 115/3 - 120 - 130
SOTTOSISTEMA M.P.A.

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GENERAL ELECTRIC
GENERAL ELECTRIC INFORMATION SYSTEMS ITALIA

GE 130

MPA SUBSYSTEM

Description

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1. SUBSYSTEM GENERAL CHARACTERISTICS

1.1. - INTRODUCTION

The MPA 130 (SIN 460) is a multi-channel adaptor utilized to:

- Increase the number of peripherals that may be connected to any Central Processor by 4.
- Regenerate signals whenever the connection envisaged is greater than the max allowed by the cable lengths.

1.2. - GENERAL

1.2.1. - Application

The MPA 130 has 5 connectors displaying Standard GE 100 interfaces.

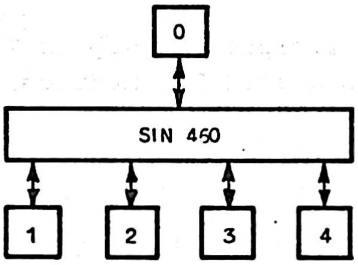


Fig. 1.1. - MPA 130 connectors

The connector (0) is used for connection with the Central Processor, while the other four, 1, 2, 3 and 4, are utilized to connect peripherals or connector (0) of an other MPA 130 for doubling-up.

1.2.2. - Compatibility

The MPA 130 may be connected by means of connector (0) to the following points:

1) - GE 130 Central Processor connector 3.

2) - GE 130 Central Processor connector 4.

3) - Connector 1, 2, 3 or 4 of another MPA 130.

To the four output connectors of the MPA 130 can be connected:

1) - Peripheral subsystems having Standard controllers.

2) - Other MPA 130s.

3) - The Manual Peripheral Switch VAR 610.

The maximum number of MPA 130s that can be cascade connected is two.

1.3. - PHYSICAL CHARACTERISTICS

1.3.1. - Dimensions

The dimensions of the Multi Peripheral Adaptor 130 subsystem are equivalent to those of one and a half standard SMN modules.

1.3.2. - Ventilation

The MPA 130 dissipates about 100 W and is cooled by a VAR 321 fan group.

1.3.3. - Location

The MPA 130 can either be housed within the cabinet of the operator's console or in a separate cabinet altogether.

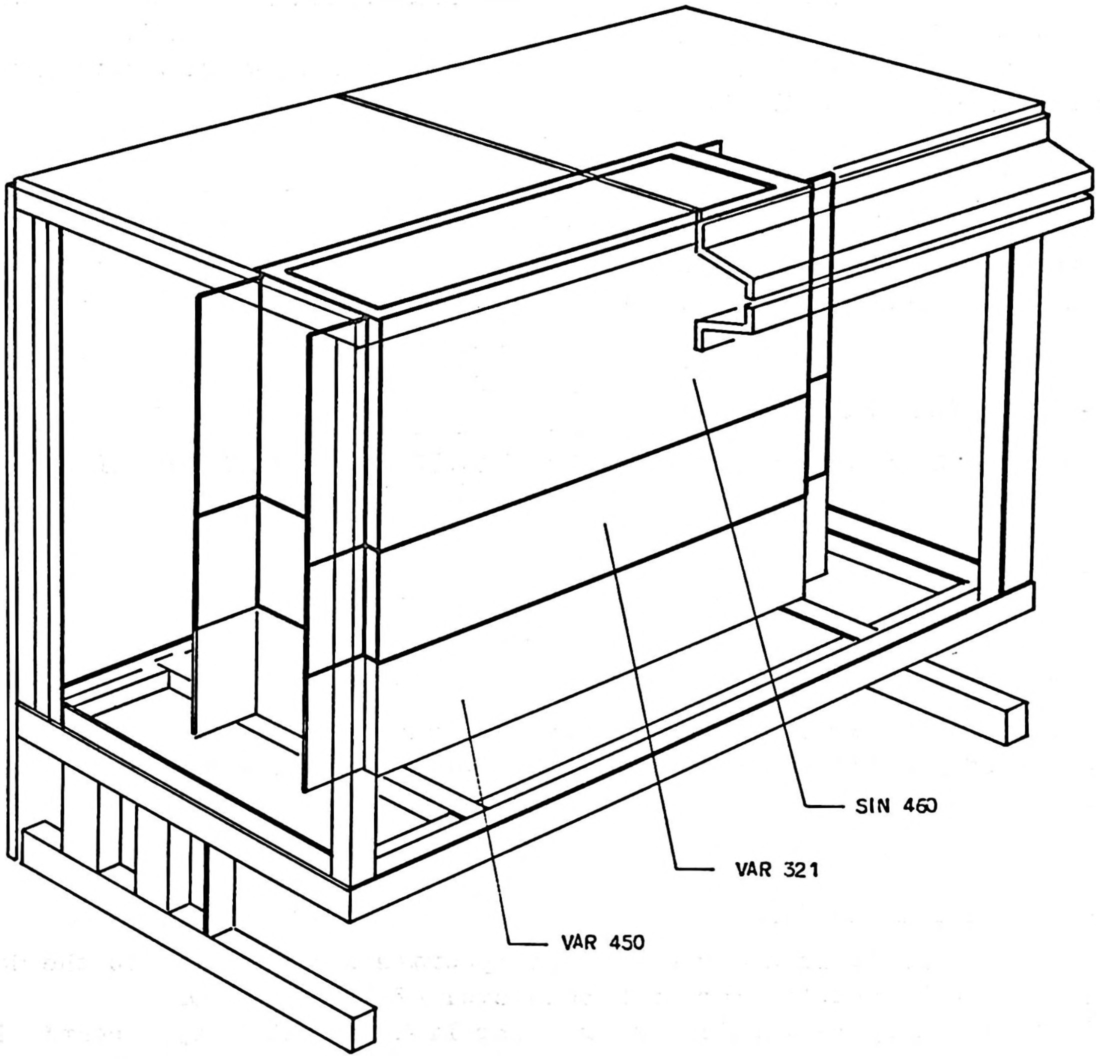


Fig. 1.2. - MPA 130 make-up and location

1.4. - ELECTRICAL CHARACTERISTICS

The MPA 130 is supplied with electrical power through two bus bars directly from the system Power Supply. One bus bar carries the +20 V, the other the ground.
Power for the fan group is tapped from terminal board P2, on ALI 032,and fed through the VAR 450.
The functional limits of the VAR 450 are controlled by thermoswitch groups. These are connected to the VAR 300.

1.4.1. - Power requirements

Power requirement on the +20 V is 5 A.
The fan group draws 0.5 A from the AC supply.

1.5. - CIRCUITAL STANDARD

The Circuital Standard employed on the MPA 130 is that of the SCL 1 type.

1.6. - OPTIONS

1.6.1. - MPA 130 levels

By re-locating a PONT type board, with the consequent decode of CPU signals, two levels of MPA 130 can be obtained, serving a maximum of 32 Peripheral Units.

1.6.2. - Interrupt signal

An Interrupt Signal, from any of the peripherals and directed to the Central Processor, can be enabled for each connector of the MPA 130.
This is obtained by re-locating a bridging link on a FACI type board inserted in slot P-39.

2. GENERAL PROGRAMMING CHARACTERISTICS

For more details, refer to Dwg. 14012236 chap. 2702.
The selection of an MPA 130 connector is done through character "U". This character is stored in Register RE in the CPU.
The bits making up the "U" character take on the following meanings:

- bits 07 - 06 : used to select one of the 4 CPU connectors,
- bits 05 - 04 : used to select one of the four MPA 130 connectors at 1st level (See table),
- bits 03 - 02 : used to select one of the four MPA 130 connectors at 2nd level,
- the remaining bits are utilized to select a peripheral unit within a multiple controller.

MPA 130 CONNECTOR	BIT OF "U" CHART. OF RE	
	05	04
1	0	0
2	0	1
3	1	0
4	1	1

3. OPERATION AND MAINTENANCE CHARACTERISTICS

Subject informations found in relevant publications.

4. THEORY OF OPERATION

4.1. - GENERAL BLOCK SCHEMATIC LEVEL

4.1.1. - Signals from connector "O" to connectors 1 through 4

Information appearing on connector "O" are regenerated and quadruplicated and sent to the 4 output connectors together with the connector selection code. See Dwg. 14012235.

4.1.2. - Signals from connectors 1 through to connector "O"

Informations from the 4 connectors are each conditioned with the selection code of the pertinent connector, ORed together and fed to connector "O". See Dwg. 14012235.

4.2. - DESCRIPTION

4.2.1. - Connectors

The MPA 130 has one data input connector "O" and four data output connectors, them being connectors 1, 2, 3 and 4.
Each connector is identified by decoding certain bits of the "U" character contained in the Central Processor register RE.

4.2.2. - Logic

The MPA 130 can be divided in the following logic blocks:

- Selection logic network and board PONT.
- Regeneration and quadruplication of data for peripheral controllers.
- AND/OR of conditions to CPU connector O.
- Interruption enable (INES).

4.2.2.1. - Selection logic network

Selects one of the four connectors depending on the configuration of the "U" character coming from the CPU. This character is forwarded with the usual modalities pertaining to data transfer (AIFU through MIFU) and no check is performed on such data.

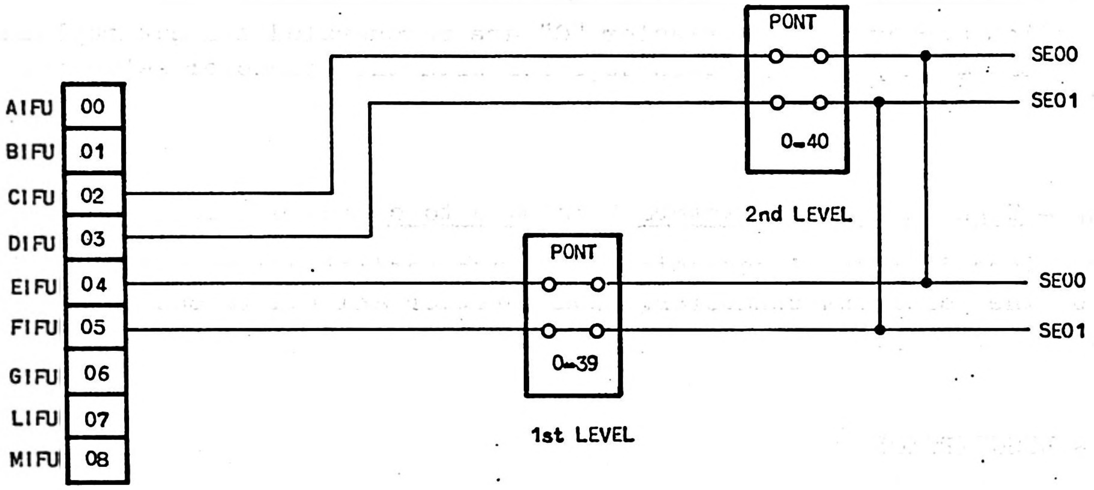


Fig. 4.1. - Selection logic network

The decode of the "U" character is only partial.
EIFU (2^4) and FIFU (2^5) are the bits that interest the 1st MPA.
For second level MPA, the check is done with bits CIFU (2^2) and DIFU (2^3).
The selection of the bits to be used, and consequently which MPA level is required, is done by board PONT A. This board is located in slot 0 - 39, for 1st level, or slot 0 - 40, for 2nd level MPA.
The equipment is always delivered with the PONT A board fitted in slot 0 - 39 irrespective of the utilization envisaged.
The four combinations of the two bits chosen for the decode, generate the four PUOXX selection signals, belonging to the four connectors, either 1, 2, 3 or 4.
In fact, signal SE00 and SE01 (both true and false) conditioned to the PU00 from CPU and signal AEBE, place all the SE01 through SE04 flip-flops, in the set condition except the one corresponding to the connector selected.

NOTE

All Interface signals at 0 V, have logic level "1" exception made for signal INES.

Connector selection example for MPA 130 level 1.

Dwg. 14012236 chap. 2702.

Bits EIFU and FIFU are at logic "1". Therefore SE00A and SE01A are at "0"and SE001 and SE011 at level "1".

Dwg. 14012236 chap. 2701.

With SE001, SE10A, PU00 (selection from CPU) and AEBE5 (selection strobe from CPU) at zero, PU001 is at "0" with the consequent selection of connector 1. PU002, PU003 and PU004 are at "1".

Simultaneously to what said above, signals coming from connector 1 are enabled by signal SU01B at level zero (see chap. 2693 through 2697), wile the remainding are inhibited. In this way the only way open for data dialogue is through connector 1.

Selection signals are stored in flip-flops SU01 through SU04 (MPA 130) by signal AEBE. This signal is issued during the general phase. Selection signals remain stored in the MPA, either until the arrival of signal AECO,which is issued at the end of the instruction interesting that particular connector, or by signal CAGU which is emitted by the CPU.

4.2.2.2. - Data-to peripherals regeneration and quadruplication

All the informations transiting through connector 0 of the MPA 130 are regenerated, quadruplicated and forwarded to the 4 output connectors.

See Dwg. 14012236 chaps. 2698, 2699 and 2700. Board INCA E absolve such function.

Fig. 4.2. shows the utilization of such board.

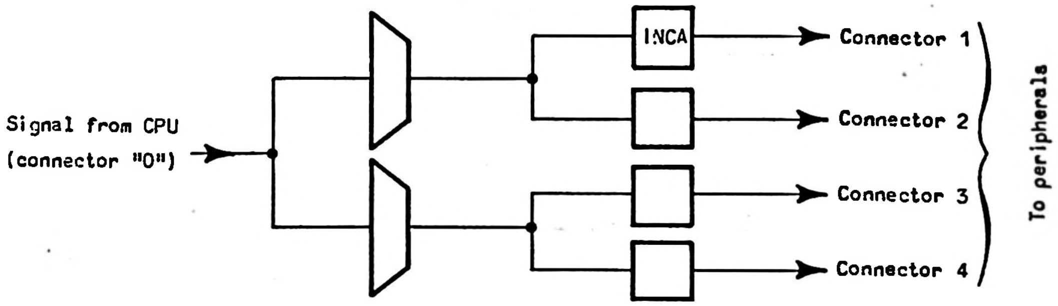


Fig. 4.2. - Board INCA E

The output generators are partially calibrated (12 loads). If the generator outputs are not utilized, the signals produced can remain floating.
The output voltage, with circuits cut-off, is about 8.3 V.

4.2.2.3. - AND/OR of conditions towards connector "O"

Informations coming from the peripheral units or the MPA 130, with the exception of the Interrupt signal INES, are conditioned to the connector selection code, then together put in OR.
The board utilized to fulfill such function is AOCA. See Fig. 4.3.

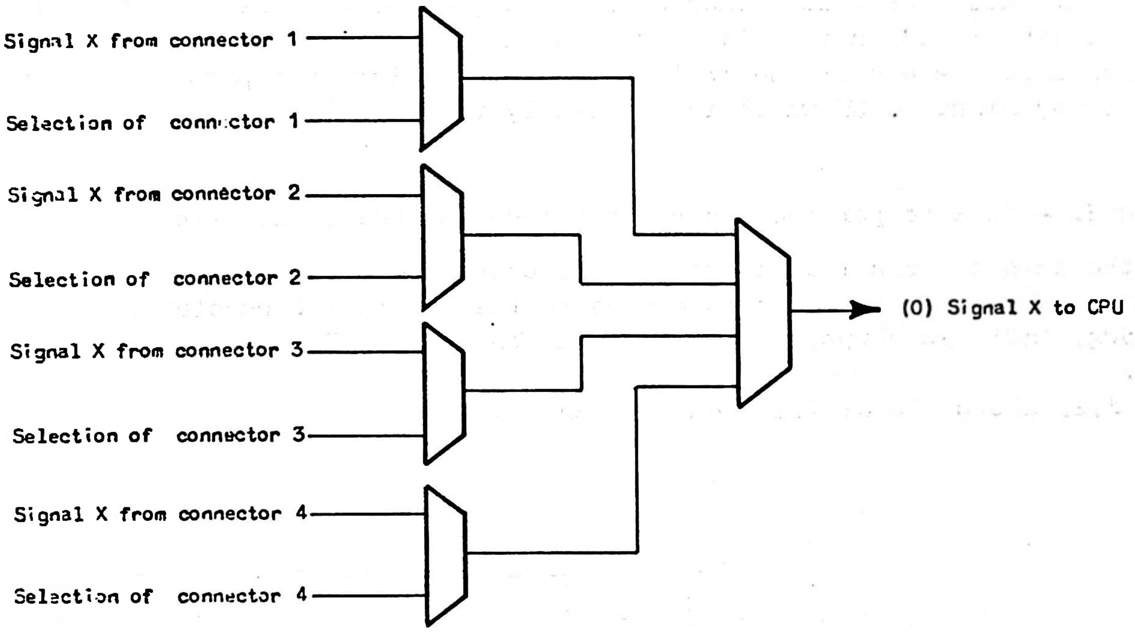


Fig. 4.3. - Board AOCA

The output generator is a power NOR formed by two transistors each having two inputs. The NOR is only partially calibrated with 12 loads.

4.2.2.4. - Interruption enable signal INES

The four interrupt signals coming from the peripheral connectors are not conditioned to the selection code. They are ORed together.
Logic level "1" is utilized as a positive electrical signal.
By shifting a number of bridging links on a FACI board, located in slot P - 39, it is possible to either enable or disable each of the Interrupt on signals.
The diagram of Fig. 4.4. shows the various links possible, with the continuous line denoting enable and the broken line the disable conditions.

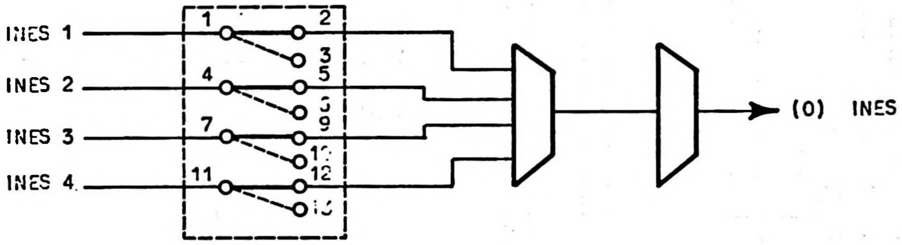


Fig. 4.4. - Interruption signals enable

The equipment is always supplied to the customer with all four Interruption signals disabled.

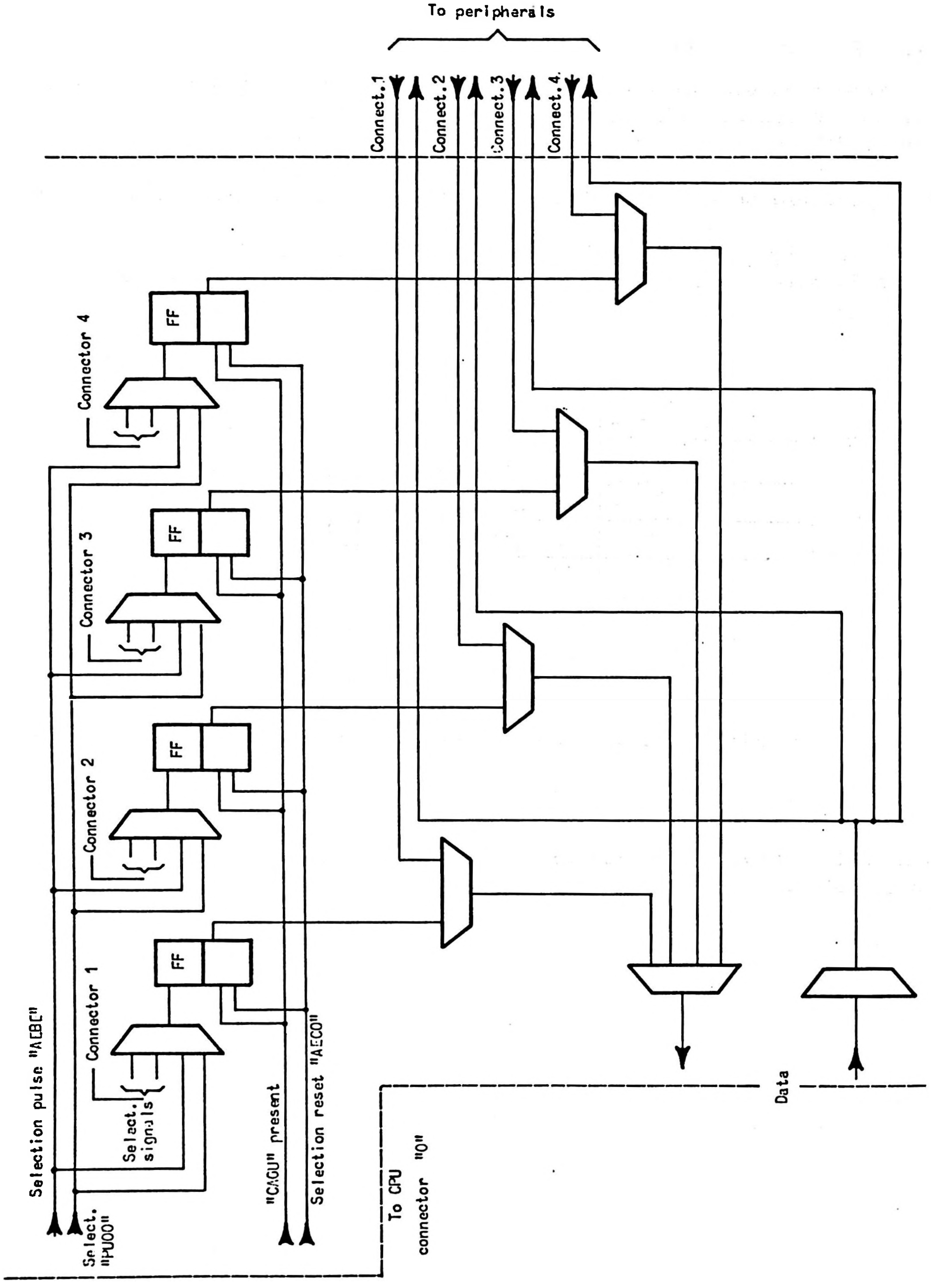
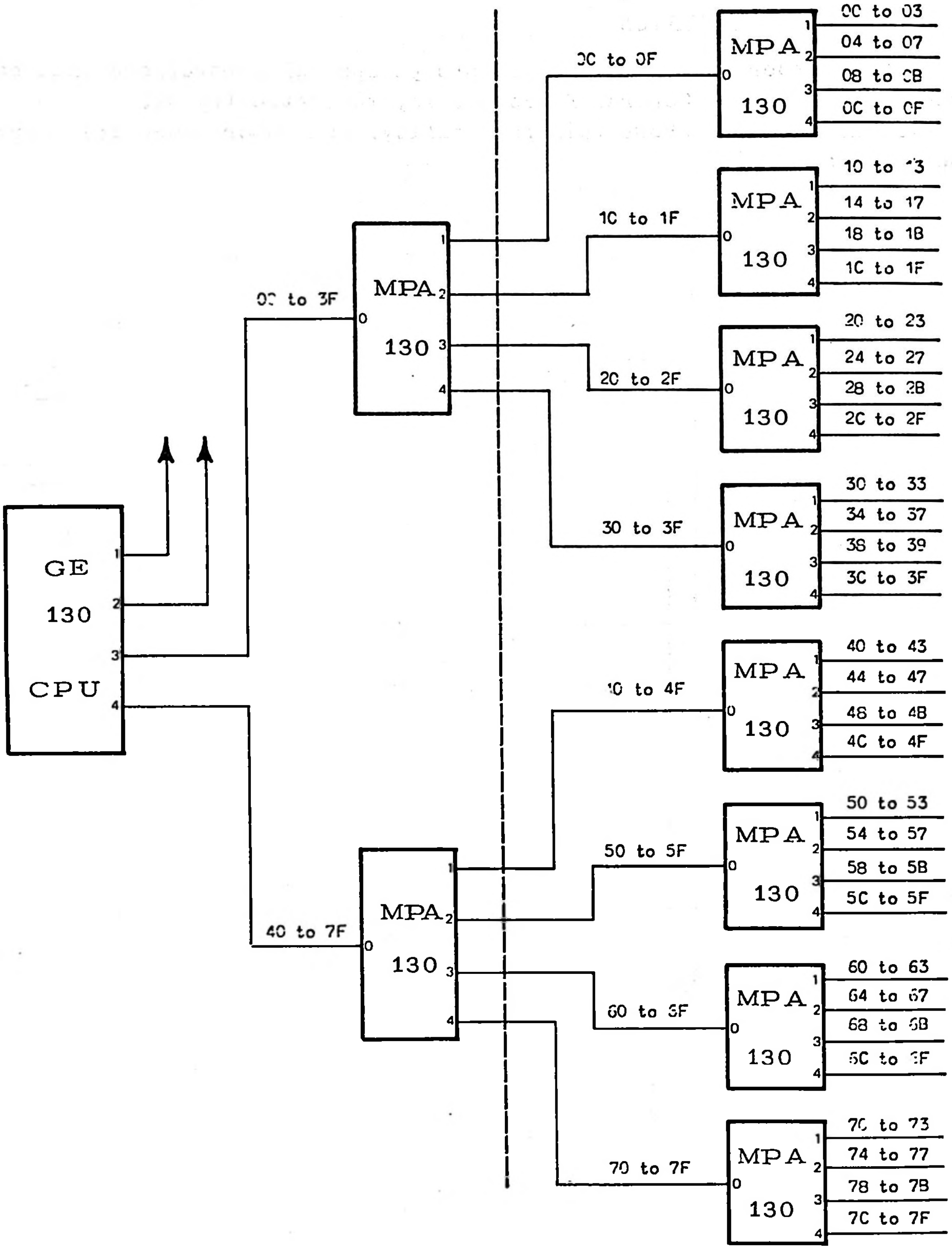


Fig. 4.5. - Functional schematic of the MPA 130

4.3. - CONNECTOR LIMITATION

The maximum number of single or multiple peripheral controllers that can be connected to a GE 130 Central Processor is, throretically 34.
The following drawing shows this possibility. Connector names are expressed in hexadecimal code.



1st level PONT in 0 - 39

2nd level PONT in 0 - 40

Fig. 4.6. - Connectors

5. INTERFACE

5.1. – INTERFACE CONNECTORS

	A	B	C	D	E
1	AIFU	AIFE	CAGU	PU00	AEBE
2	BIFU	BIFE	FINU	MAPE	AECO
3	CIFU	CIFE	▣	TESE	●
4	DIFU	DIFE	VICU	MARE	●
5	✳	✳	✳	✳	✳
6	EIFU	EIFE	FINE	MATE	-
7	FIFU	FIFE	PE00	INES	-
8	-	-	-	-	-
9	GIFU	GIFE	SEGE	CAPE	-
10	LIFU	LIFE	FISE	ZI06	-
11	-	-	-	-	-
12	MIFU	MIFE	SECO	IGOL	-
13	TE10	TU10	EGOL	NU10	-
14	-	-	-	-	-
15	TU20	TE20	ERCA	NU20	-
16	TE30	TU30	✳	NU30	-
	⏚	⏚	⏚	⏚	⏚

✳ - Free pin for connector towards the CPU (0).
- For connectors towards peripherals (1, 2, 3, 4) put to ground.

▣ - Standard signal CONU. For connector towards CPU calibrated with 1.1 K to ground.
- For connectors towards peripheral (1, 2, 3; 4) always kept at positive level.

● - Free pin for connector towards the CPU (0).
- For connectors towards peripherals calibrated with 1.1 K to ground (1, 2, 3, 4).

NOTE : - All interface signals at 0 V assume logic level "1" exception made for INES.

5.2. - CONNECTOR POSITION

5.2.1. - Connectors towards CPU

SYMBOLIC CONNECTOR NAME	CABLE POSITION
A	P-04
B	P-05
C	P-06
D	P-07
E	P-08

5.2.2. - Connectors towards peripheral

SYMBOLIC CONNECTOR NAME		CABLE POSITION
CONNECTOR (1)	A	P-10
	B	P-11
	C	P-12
	D	P-13
	E	P-14
CONNECTOR (2)	A	Q-14
	B	Q-15
	C	Q-16
	D	Q-17
	E	Q-18
CONNECTOR (3)	A	Q-20
	B	Q-21
	C	Q-22
	D	Q-23
	E	Q-24
CONNECTOR (4)	A	R-24
	B	R-25
	C	R-26
	D	R-27
	E	R-28

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GE 130

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1. INTRODUCTION

The purpose of this manual is to furnish a sequence of operations to optimize the installation of a Multi-Peripheral Adaptor MPA 130 (SIN 460 A) sub - system.
The mentioned operations are subordinated to the fact that the site has been adequately prepared in accordance with the requirements quoted in the "Site Preparation" manual.
The described installation operations do not directly consider the configuration of the system.
The installation team will draw all the necessary informations inherent to the subsystem to be installed from two auxiliary documents, individual to each installation:

1) - Site layout

The site layout gives the collocation of the subsystem in the site.
The layout also shows those accessories which, though not normally supplied with the subsystems, are necessary to overcome particular space or operative problems, such as extra low level cable ducts, cable ways and so on.

2) - Unified Subsystems Connections

The two forms bearing the above name, give information upon the connection of the subsystems to:

- the CPU or peripheral adaptor connectors,
- the centralized DC power supply,
- the AC supply breakers,
- the fan supply and their protections,
- the AC power supply control circuit.

The Unified Subsystems Connections (USC) forms also give details on the in - sertion of plugs and terminators.
A detailed description on how to use the USC forms, will be found in the CPU Installation Manual (Second Edition) P.N. 4.571.0.001. /A.
The final check-out of the subsystem must only be done if the structural and electrical connections have been completed and if the check-out of the Cen - tral Processor has been done.
It is furthermore indispensable that, throughout this phase, the responsible engineers take all foreseeable safety precautions to prevent accidents or injuries to persons.

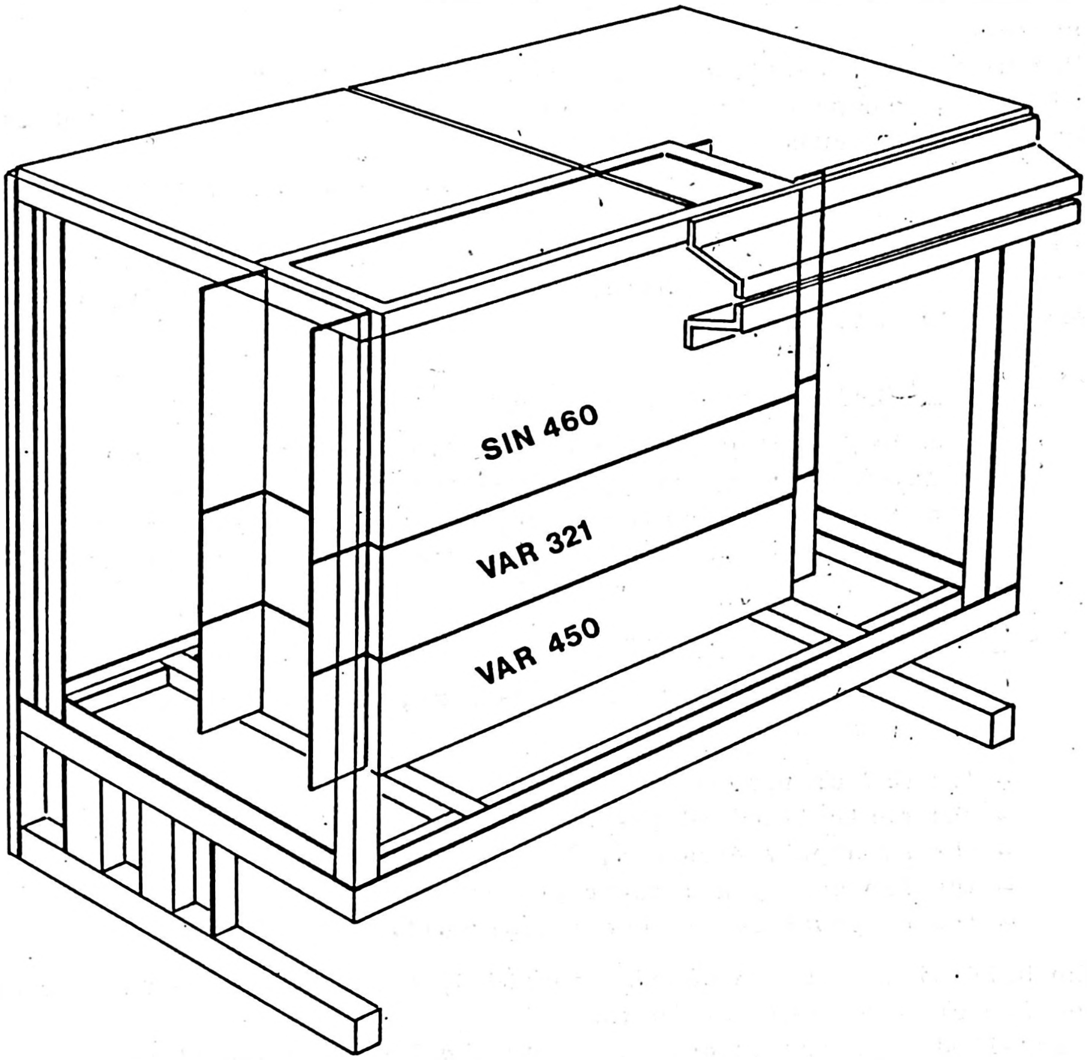

Fig. 1.1. - MPA 130 fitted inside the console

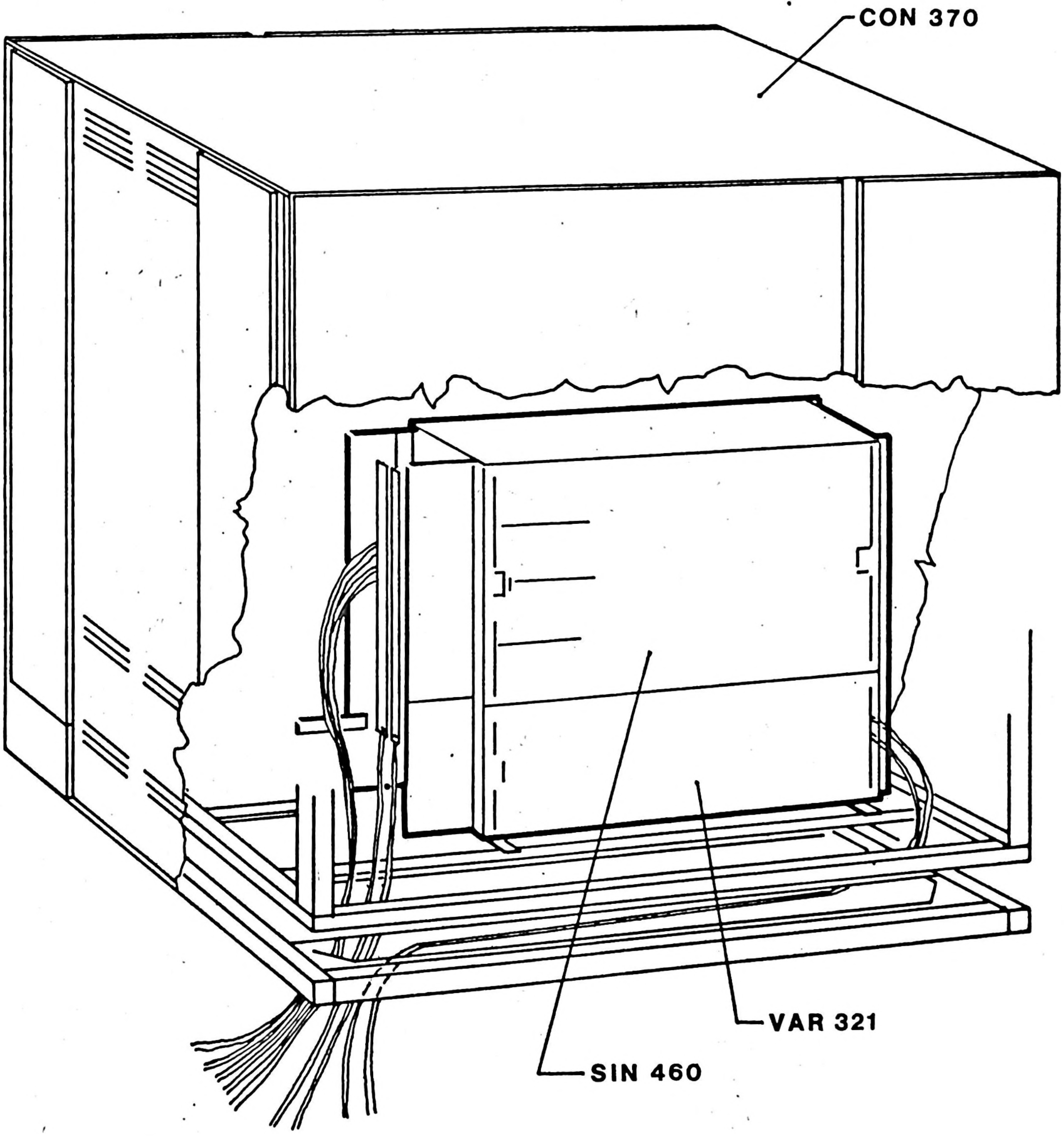

Fig. 1.2. - 2 ND MPA 130 subsystem fitted in an individual cabinet

2. TOOLS AND INSTRUMENTS

The operations to be performed to install a Multi-Peripheral Adaptor subsystem may be carried out with the use of the following equipment:

- Engineer's tool kit,
- Site tools.

3. ACCEPTANCE AND COLLOCATION

3.1. - PACKING

The subsystem may be shipped to its destination on one of three ways:

- directly fitted inside Wing F (Console),
- in an individual container (Sin 460 A + VAR 321), to be fitted in Wing F.
- in an individual cabinet (2 nd MPA).

3.2. - ACCEPTANCE

All packages are to be visually examined for damage. If any damage is noticed, it will be necessary to:

- have the carrier witness the entity of the damage,
- submit a detailed report to Headquarters.

3.3. - UNCRATING

- Ensure that the subsystem is uncrated adhering to the recommendations set down in the uncrating guide attached to the outside of the crate.
- Ensure that contents tally with the description.
- Remove from the crates the documents and accessories therein contained and set them aside.

4. MECHANICAL ASSEMBLY

4.1. - MPA IN WING F

Carry out the mentioned operations if the subsystem is supplied in an individual packing.
The assembly is achieved by locating the subsystem on top of the VAR 450, inside Wing F (Console), and fixing it with the provided screws. Refer to dwg. n° 15043512 hereby attached.

4.2. - MPA IN CABINET (2ND MPA)

Refer to dwg. n° 15043908.
In case of a double floor site, certain mechanical assembly operations may not be required.

5. CABLE CONNECTIONS

5.1. - MPA IN CONSOLE

The operations here described are to be done at the same time as cables are connected to Wing F (Console).
Refer to dwg. n° 15043512, attached.

1) - Connections to be done if subsystem is received separate.
Draw out cable kit P.N. 0646765 and connect up the MPA 115 with the following cables, adhering to their pertinent markings:

   - 5 logic cables (P04-05-06-07-08) : C79 to C83,
   - 2 DC cables (+20 V and ground buss bars) : C86 and C87,
   - 2 AC and control cables (P20-1-2-3-4-5 and P20-7-8-9) : C84 and C85.

2) - Connections to be done in every other event (either separately furnished or already fitted). Adhering to the symbolic cable markings connect up:

   - 5 cables to Wing C (UCE 460) : C79 to C83, (table L of USC)
   - 2 cables to Wing D (+20 V and GRD): C86 and C87, (table U of USC)
   - 2 cables to Wing F (VAR 450) : C84 and C85, (table V of USC).

If required, see table L of USC form, enable the connectors to interrupt option.
Refer to dwg. n° 14024279 and check that the disabled connectors have jumpers correctly fitted.
Secure signal cables to the mounting rack by means of the provided clamps and nylon thumb screws.

5.2. - 2ND MPA

Refer to dwg. n° 78B100682.
Adhering to the pertinent cable markings , connect up the following cables:

- 5 logic cables to Wing C (UCE 460) : C1 to C5 (table L of USC)
- 2 cables to Wing D (+20 V DC and GRD): C8-C9 (table U of USC)
- 2 AC cables to Wing F (VAR 450) : C6-C7 (table V of USC)

If required, see table L of USC form dwg. n° 4.072.0.111, enable the connectors to interrupt option.
Refer to dwg. n° 14024279 and check that the disabled connectors have jumpers correctly fitted.
Secure signal cables to the mounting rack by means of the provided clamps and nylon thumb screws.

Note :

Whenever cable markings result missing or difficult to decipher, cross refer to dwgs. n° 15023151 and 788100684.

6. VISUAL CHECKS

When all cable connections have been done, it is indispensable to carry out an accurate visual check on:

- the correctness of the mechanical assembly,
- the proper insertion of all boards, cable connectors and plugs,
- the wire-wraps for loose wraps, bent pins or broken wires,
- the layout, the path and correct attachment of all cables,
- the effective electrical connection of all leads to terminal board P20 and correct cover attachment.

7. CHECK-OUT

- Meter test for no short-circuits between +20 V buss bars and ground.
- After having applied power (refer to CPU Installation Manual n° 4.571.0.001. /A), check the correct operation of the fans and the presence of the +20 on the buss bars.

8. FINAL OPERATIONS

8.1. - CHECKS AFTER HANDOVER TO CUSTOMER

- Check that type and part number, on the unit yellow label, correspond to the "Product Composition Sheet".
- Check that the drawings and their updating indices, shown in the subsystem folder, correspond to those given in the "Product Composition Sheet".
- Transcribe the relevant indices on the "FCO Status Log".
- Prepare a Report giving details of snags or defects found during the installation.

9. WITHDRAWAL

The following procedures have to be followed when either the first or second MPA is to be removed from a site.

9.1. - SUBSYSTEM REMOVAL

The subsystem must be reshipped complete of the following:

- Not yet implemented FCOs.
- Machine documentation as per FCO Status Log.
- Subsystem accessories and Part Kits.
- Manuals and diagnostic decks.

9.2. - OPERATIONS FOR THE FIRST MPA 130

- Remove Power from the system.
- Remove console panels.
- Disconnect the AC, DC, signal and services cables. Ends marked with X on dwg n° 15023151 are be left connected to the MPA.
- Carry out all the necessary mechanical disassembly operations.
- Neatly roll up all cables so as to prevent damage during transport.
- Group all the parts pertinent to the subsystem Kit, by referring to "Cables and parts list to connect the physical unit" schematic.

9.3. - OPERATIONS FOR THE SECOND MPA 130

Refer to para. 9.1. for general rules.
Carry out following operations:

- Remove the subsystem panels.
- Disconnect AC, DC, signal and services cables.
- Neatly roll up all the cables.
- Group all the parts of the subsystem Kit, referring to "Cables and parts list to connect the physical unit" schematic.

10. ATTACHED DRAWINGS

To complete the present Installation Manual, the following drawings have been attached:

Description	Drawing N°	Sheet N°
Board fitment	14024279	2
Cable and parts list to connect the physical unit	15023151	-
Block Schematic - Physical	15043512	1 - 2
Block Schematic - Physical for 2 ND MPA	788100682	-
Physical Unit connection - Detail 9	15043908	-
Cable markings	788100684	-
USC for 2nd MPA	4.072.0.111 /A	-

COLONNA COLUMN	RIGA ROW O	RIGA ROW P	RIGA ROW Q	RIGA ROW R
1				
2	FICOA	FICOA		
3				
4	* AOCA			
5	* AOCA			
6	* AOCA			
7	* AOCA			
8	* AOCA			
9	AOCA			
10	* AOCA			
11	* AOCA			
12	* AOCA			
13	* AOCA			
14	* AOCA			
15	AOCA			
16	INCAE	* INCAE		
17	INCAE	* INCAE		
18	INCAE	* INCAE		
19	INCAE	INCAE		
20	INCAE	INCAE		
21	INCAE	INCAE		
22	AOCA	INCAE		
23	AOCA	INCAE		
24	AOCA	INCAE		
25	AOCA	INCAE		
26	AOCA	INCAE		
27	AOCA	INZE		
28	AOCA	INZE		
29	AOCA	INPOE		
30	AOCA	INPOE		
31	AOCA	FLIPB		
32	AOCA	FLIPB		
33	AOCA	NORRCA		
34	AOCA	NORRCA		
35	AOCA	NORRCA		
36	AOCA	NORRDS		
37	AOCA	CAP4		
38	AOCA	CAP2		
39	*** PONTA	** FACI		
40				

NOTE: * - ** - *** - Vedi fog. 2 - * - ** - *** - See Sh. 2

REV.				
0		97644	24-5-68	

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emiss.
appr. Zulian

INSERZIONE PIASTRINE - *BOARD LOCATION*

SIN 460

1°applic.

GENERAL ELECTRIC

sez.-sec. SPS -CGE
loc. Pregnana Mil.

N° 14024 279 0
cont. su fo. 2 fo. 1

Cod. 3896085 X

GENERAL ELECTRIC

SIN 460
INSERZIONE PIASTRINE-BOARD LOCATION
1° APPLIC.

CONT. SU FO. / FO. 2

NOTE

(*) All'atto del montaggio togliere la guida dalle piastrine , procedendo come da dis. 050140610.

When fitting PWBs, remove guides as drwg 050140610.

(**) Tabella per l'inserzione dei ponticelli (tipo C) nella piastrina FACI.

Table to insert strappings (type C) on the PWB.FACI.

FACI P39

	Bocchettoni-Connectors			
	1	2	3	4
Interruzione abilitata Interruption enable	1-2	4-5	7-9	11-12
Interruzione disabilitata Interruption disable	1-3	4-6	7-10	11-13

a/s auf 30 = 1-3/4-6/7-10/11-12

(***) La piastrina PONT A va inserita in 0-39 se il SIN é collegato al 1° livello, in 0-40 se il SIN é collegato al 2° livello. Salvo indicazione contraria la piastrina va inserita in 0-39.

The PWB PONT A must be inserted in 0-39 if the MPA is connected at the 1st level , in 0-40 if the MPA is connected at the 2nd level. Unless otherwise specified the PWB must be inserted in 0-39.

REVISION 0 97644 24-5-68

COPIE A: TO: IND. REV.

UNIT

COMPIL. Zulian
EMISS.
APPR. Zulian
SEZ. SEC. D.P.S.-O.G.E.
LOC. Pregnana Milanese
N° 14024 2790
CONT. SU FO. / FO. 2

Cod. 35°6128 F

	RIF. REF.	TIPO TYPE	MARCATURA CAVI / CABLE LABELLING LATO INT. ALL' U.F. SIDE INT. TO PH. UNIT	MARCATURA CAVI / CABLE LABELLING LATO EST. ALL' U.F. SIDE EXT. TO PH. UNIT	FUNZ. FUNCT.	NOTE NOTES	RIF. REF.	KIT 1 COD. 0646765F CODICE CODE	KIT 1 Q	KIT 2 COD. CODICE CODE	KIT 2 Q
X	C79	NS 45	SIN 460 P04	L - MPA - A	Log.		C79	0641229M	5		
X	C80	NS 45	SIN 460 P05	L - MPA - B	Log.		C80				
X	C81	NS 45	SIN 460 P06	L - MPA - C	Log.		C81				
X	C82	NS 45	SIN 460 P07	L - MPA - D	Log.		C82				
X	C83	NS 45	SIN 460 P08	L - MPA - E	Log.		C83				
X	C84	AL 147	VAR 321 P20-1	V - MPA. - 1	A.C.	1	C84	0640554S	1		
			P20-2	2		2	C85	0640621S	1		
			P20-3	3		3	C86	0640401G	1		
			P20-4	4		4	C87	0640406M	1		
			P20-5	5		5					
X	C85	AL 141	VAR 321 P20-7	V - MPA - 7	CONTR.	4					
			P20-8	8		6					
			P20-9	9		3					
X	C 86	AL 100	SIN 460 BARRA +20	U - MPA - +20	D.C.	6					
X	C87	AL 101	SIN 460 BARRA 0	U - MPA - Massa	D.C.	3					

	DESCRIZIONE PARTI PARTS DESCRIPTION	KIT 1 COD. 0646766K CODICE CODE	KIT 1 Q	KIT 2 COD. CODICE CODE	KIT 2 Q	NOTE NOTES
X	VITE T.C. CAVA ESAG. M5x15	6313132B	4			7
X	RONDELLA PIANA ø 5.3	6331105T	4			7
X	RONDELLA ELASTICA ø 5.3	6332105F	4			7
X	DADO ESAGONALE MEDIO M5	6321105S	4			7

NOTE:
NOTES:
1) Colore ROSSO (RED) 2) Colore BLU (BLUE) 3) Colore NERO (BLACK)
4) Colore MARRONE (BROWN) 5) Colore VERDE (GREEN) 6) Colore GIALLO (YELLOW)
7) PER IL MONTAGGIO VEDERE DISEGNO 15043 512 (FOR THE ASSEMBLY REFER TO DWG. 15043 512)

X) PARTI MONTATE ALLA SPEDIZIONE, SALVO CHE IL SIN 460 VENGA SPEDITO SEPARATO DALLA CONSOLE.
PARTS ASSEMBLED WHEN DELIVERED, UNLESS MPA 130 IS TO BE SHIPPED SEPARATELY FROM THE CONSOLE

REV				
	0	EF 98431	12-6-68	Zulian

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emiss.
appr. Zulian

LISTA CAVI E PARTI PER IL COLLEGAMENTO DI UNITA' FISICHE
CABLES AND PARTS LIST FOR PHYSICAL UNIT CONNECTION
M P A 130 (SIN 460)

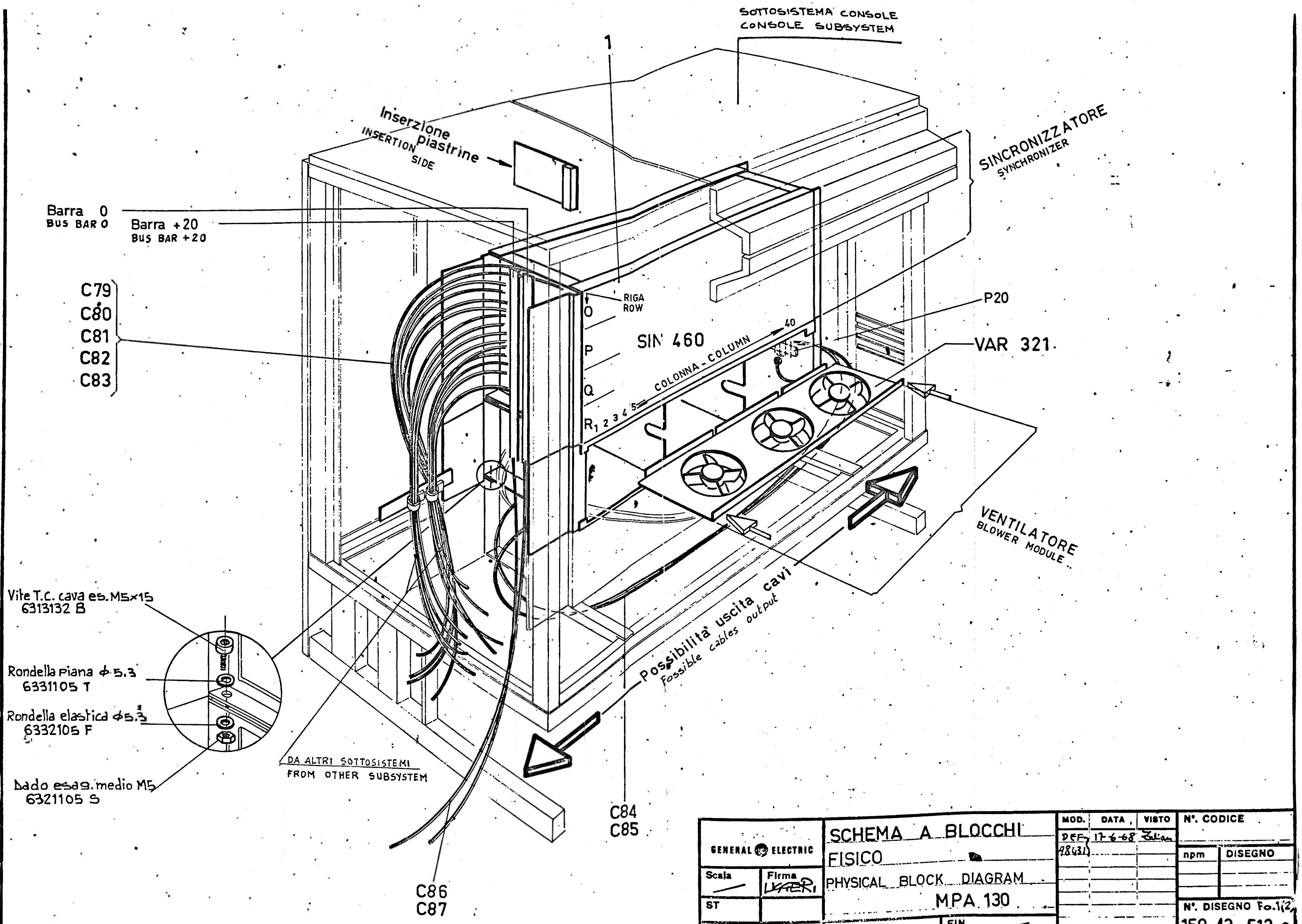
Rappl.

GENERAL ELECTRIC

sez.-sec. S.P.S.
loc. Pregnana Milanese

N° 150 23 151 a
cont. su fo. / fo. 1

Cod. 3090155 R



GENERAL ELECTRIC

SCHEMA A BLOCCHI
FISICO
PHYSICAL BLOCK DIAGRAM
MPA 130

Scala —
Firma UGERI
ST
MAT. —
TT —
FIN. —

MOD.	DATA	VISTO
DEF. 98431	17-6-68	Zilian

N°. CODICE
npm
DISEGNO
N°. DISEGNO Fo.1/2
150 43 512 o

FIRMA SIGN	IND. ORIG.	GRUPPO-GROUP 01 02 03 04 05 06	ORD. APPL.	REV	DATA	COD. ARG.	ATT. UL	ATT. UL	ATT. UL	ATT. UL	ATT. UL	ATT. UL
Zulian	DEF		98431	0	17-6-68	COD. 1 2 3 4 5 6 7						SIGLA-NAME

QUANTIT. Col. 80 · 3=Nuova ut. 8=Variaz. quant. 9-12=Utiliz. sop.

RIF. ITEM	Nº DIS.-DRAW. No	Nº COD.	DESCR.	01	02	03	04	05	06	UM	TC
1	15.043.513	0893.1.98H	ASSIEME	1							
		0646783Y	DISTINTA DI COMPLETAMENTO								
	15023.151	0646766K	LISTA PARTI PER COLLEG. S.S.T.	1							
	15023.151	0646765F	LISTA CAVI PER COLLEG. S.S.T.	1							

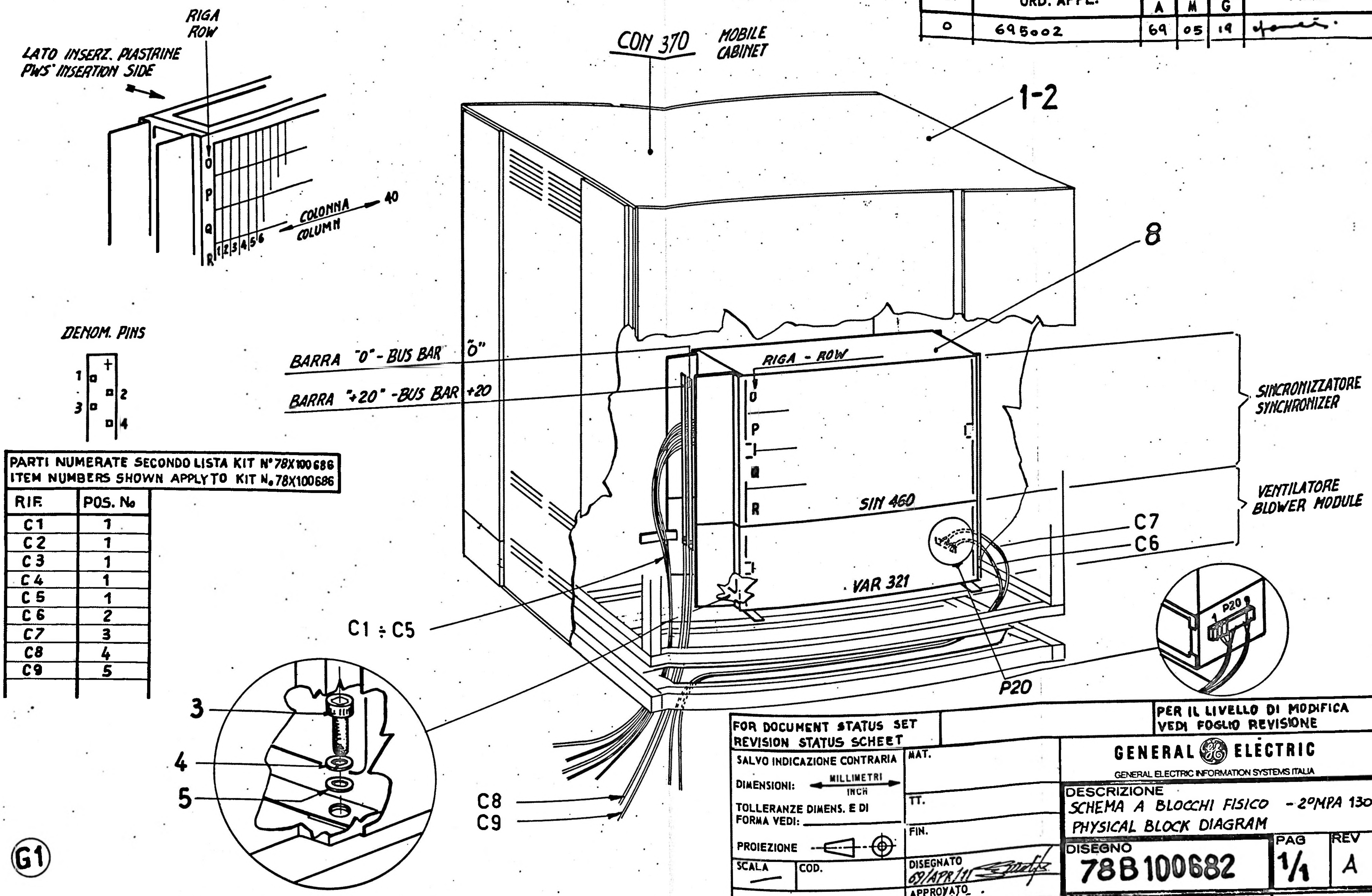
TIT. MPA 130 - SCHEMA A BLOCCHI FISICO
PHYSICAL BLOCK DIAGRAM

COMP. UGGERI	GENERAL ELECTRIC	STAND.	TP	FOR.	Nº 150 43 512 0
APPROV. Zulian					CONT. SU FO. / FO. 2

Cod. 39*5033

78B100682

REVISIONI					
REV	ORD. APPL.	DATA A	DATA M	DATA G	FIRMA
0	695002	69	05	19	



PARTI NUMERATE SECONDO LISTA KIT N° 78X100686 ITEM NUMBERS SHOWN APPLY TO KIT N. 78X100686	
RIF.	POS. No
C1	1
C2	1
C3	1
C4	1
C5	1
C6	2
C7	3
C8	4
C9	5

G1

FOR DOCUMENT STATUS SET
REVISION STATUS SCHEET

PER IL LIVELLO DI MODIFICA
VEDI FOGLIO REVISIONE

SALVO INDICAZIONE CONTRARIA
DIMENSIONI: MILLIMETRI / INCH
TOLLERANZE DIMENS. E DI FORMA VEDI:
PROIEZIONE
SCALA —
COD.

MAT.
TT.
FIN.
DISEGNATO 69/APR/11
APPROVATO
DISTR.

GENERAL ELECTRIC
GENERAL ELECTRIC INFORMATION SYSTEMS ITALIA

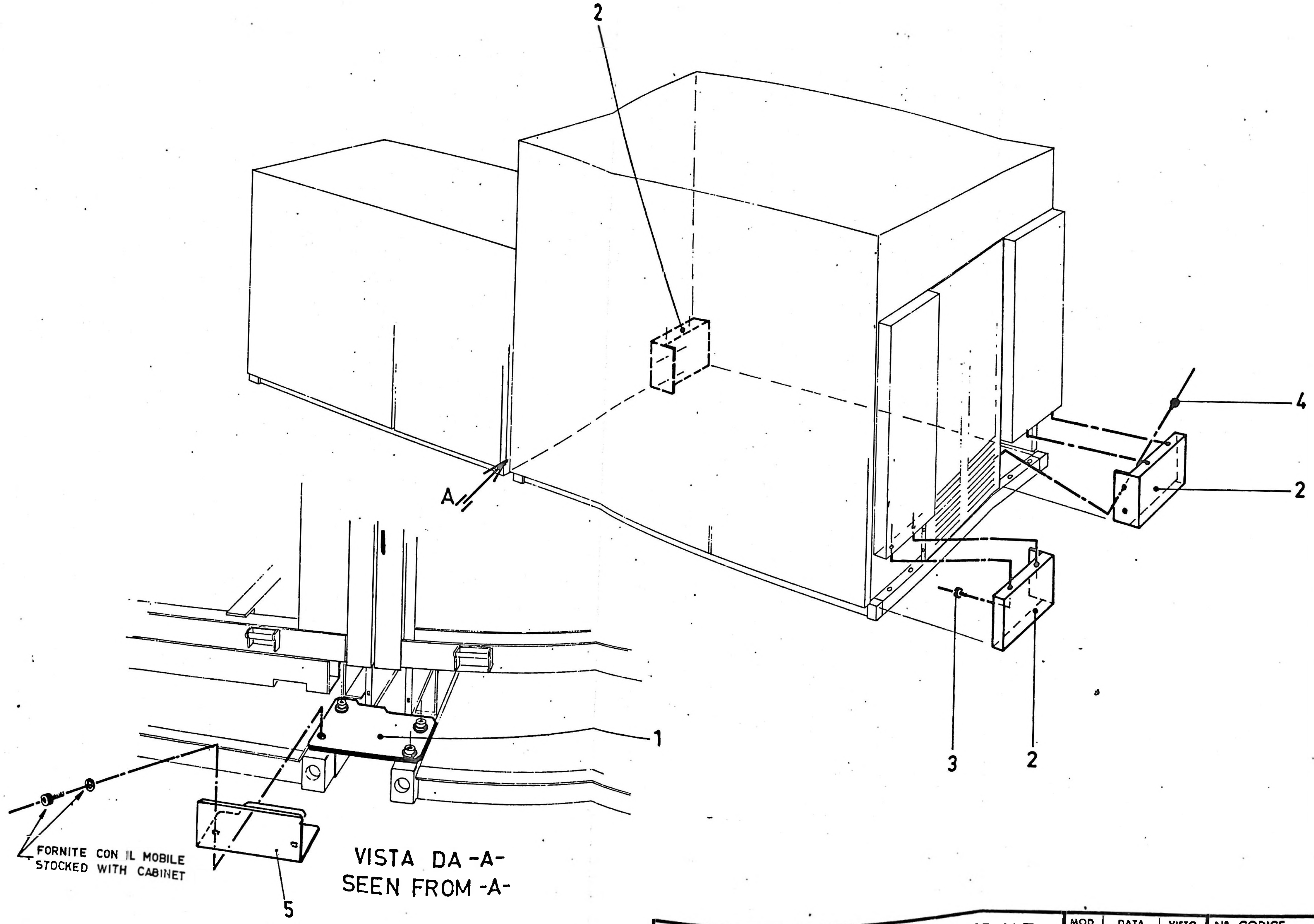
DESCRIZIONE
SCHEMA A BLOCCHI FISICO - 2°MPA 130
PHYSICAL BLOCK DIAGRAM

DISEGNO 78B100682
PAG 1/1
REV A

CODICE
0896014 B 0

Cod. 3896104 Q

68.10.30



SU FOGLIO 2 SEGUE TABELLA MATERIALI

PARTS LIST FOLLOWS ON SHEET 2

GENERAL ELECTRIC

COLLEGAMENTO U.F
PARTICOLARE 9
PHYSICAL UNIT CONNECTION
DETAIL No 9

Scala —
Firme UGGERI
ST
MAT. —
TT —
FIN. —

MOD.	DATA	VISTO
68 c 173	18·6·68	Kahll.
VEDI F.V.	20-9-68	Kahll.

N°. CODICE

npm

DISEGNO

N°. DISEGNO 150 43 908

Fo. 1(2) 1

cod. 3896103 T

FIRMA SIGN	IND. ORIG	GRUPPO-GROUP 01 02 03 04 05 06	ORD.APPL.	REV.	DATA
				0	18-6-68
			VEDI F.V.	1	20-9-68

COD. ARG	ATT.UL	ATT.UL	ATT.UL	ATT.UL	ATT.UL	ATT.UL

COD. 1 2 3 4 5 6 7 — SIGLA-NAME

QUANTIT. Col.80 : 3=Nuova ut. 8=Variaz. quant. 9.12=utiliz. sop.

RIF. ITEM	NºDIS.-DRAW.No	NºCOD.	DESCR.	01	02	03	04	05	06	UM	TD
1		0836434X	LAMIERA COLLEGAMENTO MOBILI	/							
2		0677950Y	COPERTURA CANALE CAVI	/							
3		5311242W	VITE T.C. M4×8	/							
4		00D5343D	VITE AUTOFILETTANTE ⌀4,2×9,5	/							
5		0674392G	SCHERMO PER CAVI	/							

TIT. COLLEGAMENTO U.F. PARTICOLARE 9

PHYSICAL UNIT CONNECTION DETAIL No 9

COMP. UGGERI	GENERAL ELECTRIC	STAND.	TP	FOR.	Nº 150 43 908 1
APPROV.					CONT. SU FO. — FO. 2

Cod. 3896032 2

78B100684

△1	RIF. REF. △2	TIPO TYPE	CODICE CODE	MARCATURA CABLE — LATO INT. ALL' U.F. SIDE INT. TO PH.UNIT △3	CAVI LABELLING — LATO EST. ALL' U.F. SIDE EXT. TO PH. UNIT △3	FUNZ. FUNCT.	NOTE NOTES
	C1	NS45	0641232 Y	SIN460 P04	L - MPA 2 - A	LOG	
	C2	NS45	0641232 Y	SIN460 P05	L - MPA 2 - B	LOG	
	C3	NS45	0641232 Y	SIN460 P06	L - MPA 2 - C	LOG	
	C4	NS45	0641232 Y	SIN460 P07	L - MPA 2 - D	LOG	
	C5	NS45	0641232 Y	SIN 460 P08	L - MPA 2 - E	LOG	
	C6	AL147	0640649 W	VAR321 P20-1	V - MPA 2 - 1	A.C	△
				2	2		△
				3	3		△
				4	4		△
				5	5		△
	C7	AL141	0640856X	VAR321 P20-7	V - MPA 2 - 7	CONTR.	△
				8	8		△4
				9	9		△5
	C8	AL100	0640393T	BARRA +20	U - MPA 2 - +20	D.C.	△4
	C9	AL101	0640348 L	BARRA 0	U - MPA 2 - MASSA	D.C.	△5

△10 - WHITE
△9 - GREEN
△8 - BROWN
△7 - BLUE
△6 - RED
△5 - BLACK
△4 - YELLOW

△3 - SEE LABELLING INSTRUCTION DRAWING № 09874010.

△2 - FOR THE CABLES ASSEMBLY 2nd MPA SIDE REF. TO DRAW Nº 78B100682

△1-X = PARTS ASSEMBLED WHEN DELIVERED.

NOTES

△10 - BIANCO
△9 - VERDE
△8 - MARRONE
△7 - BLU
△6 - ROSSO
△5 - NERO
△4 - GIALLO

△3 - VEDERE ISTRUZIONI MARCATURA DIS. Nº 09874010.

△2 - PER IL MONTAGGIO CAVI LATO 2° MPA VEDI DIS. Nº 78B100682

△1-X = PARTI MONTATE ALLA SPEDIZIONE.

NOTE

REVISIONI					
REV	ORD. APPL.	DATA A	DATA M	DATA G	FIRMA
0	695002	69.	05	19	

SALVO INDICAZIONE CONTRARIA
DIMENSIONI: ← MILLIMETRI / INCH →
TOLLERANZE DIMENS. E DI FORMA VEDI: ____
PROIEZIONE
SCALA
COD.

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DISEGNATO Cigogumi.
APPROVATO
DISTR.

GENERAL ELECTRIC
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DESCRIZIONE
ISTRUZ. MARCATURA

DISEGNO 78B100684
PAG 1/1
REV A

Cod. 3896104 Q

68.10.30

CABLES AND LOGICS PLUGS INSERTION _ TABLE "L"

☐ 2nd MPA 120-130 (SIN 460)												
	CONNECTOR 1			CONNECTOR 2			CONNECTOR 3			CONNECTOR 4		
	............SUBSYSTEM NAME			............SUBSYSTEM NAME			............SUBSYSTEM NAME			............SUBSYSTEM NAME		
SYMBOL NAME	SIN 460 POSIT.	CONN. SUBSYS	②	SIN 460 POSIT.	CONN. SUBSYS	②	SIN 460 POSIT.	CONN. SUBSYS	②	SIN 460 POSIT.	CONN. SUBSYS	②
A	P10			Q14			Q20			R24		
B	P11		X	Q15		X	Q21		X	R25		X
C	P12			Q16			Q22			R26		
D	P13			Q17			Q23			R27		
E	P14			Q18			Q24			R28		
			TACA-A			TACA-A			TACA-A			TACA-A

CONNECTORS TO 2nd MPA 120-130 WITH ENABLED INTERRUPTION (For operations to be performed see dwg n°14024279)							
CONNECTOR 1		CONNECTOR 2		CONNECTOR 3		CONNECTOR 4	
☐ YES	☐ NO	☐ YES	☐ NO	☐ YES	☐ NO	☐ YES	☐ NO

NOTE: ② PLUGS TO INTRODUCE IF SUBSYSTEM CONNECTED WITH 3 CABLES ‖ TACA A Cod. 0618026 G

REV.															

compl.

date

CUSTOMER :

dwg. refer :

GENERAL ELECTRIC

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SYSTEM N° GE

N° 4.072.0.111.0/A

cont. on sh. sh.

Cod. [illegible] S

GENERAL ELECTRIC
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GE 130

MPA SUBSYSTEM

Maintenance

A Field Engineering
publication

4.572.4.001.0/A

GENERAL ELECTRIC

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REVISION LEVEL

UPDATE Nº	PAGES AFFECTED	DATE
	First edition - Title page P.N. 4.572.4.001.0/A	January 1969

Mod. 0752

N.B. Remove pages identified with crossed numbers

. INDEX

. 1.	**OPERATOR TASKS**	Pag.	1
1.1.	General rules	"	3
. 2.	**MAINTENANCE CHECKS**	"	5
2.1.	Fan noise check	"	7
. 3.	**CLEANING AND LUBRICATION**	"	9
3.1.	MPA 130 filter cleaning	"	11
. 4.	**ADJUSTMENTS**	"	13
. 5.	**REMOVALS AND REPLACEMENTS**	"	15
5.1.	VAR 321 fan replacement	"	17
5.2.	VAR 321 thermoswitch replacement	"	18
. 6.	**MAINTENANCE AIDS**	"	19

1. OPERATOR TASKS

ROUTINE : **1.1**
NAME : General rules
DURATION : -
PREREQUISITES : -

1 - TOOLS AND INSTRUMENTS

- None.

2 - PURPOSE

- To ensure perfect machine operation.

3 - PRELIMINARY CHECKS

- None.

4 - PROCEDURE

1) - Ensure that the floor and the surrounds are frequently cleaned to prevent dust accumulating on the machine filters.
Clogged filters cause poor ventilation and an increment in the temperature within the machines, with a consequent reduction in efficiency.

2) - Do not use equipment that could damage the surface finish when cleaning panels and skins or that could lodge itself in the slots.

3) - Ensure that the ambient conditions (temperature and relative humidity) are within the accepted tolerances.
Keep a constant check on the field of variations. This will obviate faults not normally attributed to environmental conditions.

5 - FINAL CHECKS

- None.

2. MAINTENANCE CHECKS

ROUTINE : **2.1**

NAME : Fan noise check
DURATION : -
PREREQUISITES : -

1 - TOOLS AND INSTRUMENTS

- None.

2 - PURPOSE

- To check out VAR 321 fans operation.

3 - PRELIMINARY CHECKS

- The check must be done with the equipment switched on.

4 - PROCEDURE

1) - Check that the fans rotate noiselessly.
2) - If a noisy fan is to be replaced, refer to Routine 5.1.

5 - FINAL CHECKS

- None.

3. CLEANING AND LUBRICATION

ROUTINE : **3.1**

NAME : MPA 130 filter cleaning
DURATION : -
PREREQUISITES : The machine must be OFF

1 - TOOLS AND INSTRUMENTS

- Detergent, household fluid.

2 - PURPOSE

- To restore efficiency to the fan filtering elements.

3 - PRELIMINARY CHECKS

- Visually check that the filter element has no tears or holes. In this event, replace the filter.

4 - PROCEDURE

1) - Remove the panels on the cabinet housing the MPA.

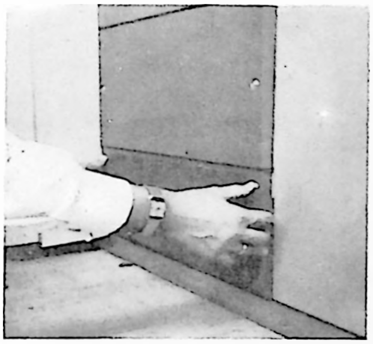

Fig. 3.1. - Removal of CPU filter panels

2) - Slacken the thumb nuts and turn the retaining plate to free the filtering element.

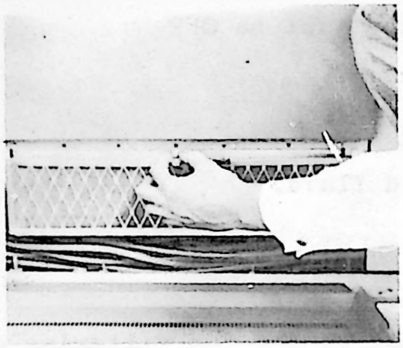

Fig. 3.2. - Release of filtering element

3) - Clean the element by agitating it in a mild household detergent solution.

4) - Reverse blow the filters dry with a low pressure nozzle.

5) - Replace the elements in their frames. Secure the filters with their screws and replace the panels.

5 - FINAL CHECKS

- None.

4. ADJUSTMENTS

5. REMOVALS AND REPLACEMENTS

ROUTINE : **5.1**

NAME : VAR 321 fan replacement
DURATION : 0.5 hr
PREREQUISITES : The machine must be OFF

1 - TOOLS AND INSTRUMENTS

- Screwdriver blade, 4 mm	P.N. 4355313 N
- General purpose handle	" 7138485 B
- Soldering iron	" 7144451 X
- Solder	" 6138215 L

2 - PURPOSE

- To replace a defective fan on the VAR 321.

3 - PRELIMINARY CHECKS

- None.

4 - PROCEDURE

1) - Remove the panels on the cabinet housing the MPA.
2) - Remove the two filters as per Routine 3.1.
3) - Remove the two outer screws securing the VAR 321 fan assembly.
4) - Remove the +20 V input lead from the VAR 321,P21 terminal strip.
5) - Withdraw the fan mounting plate. Do not stress the fan supply cable.
6) - Unsolder the two supply leads from the defective fan.
7) - Unscrew the fan from the mounting plate.
8) - Remove the finger guard grille from defective fan.
9) - Mount the finger guard grille on the new fan, on air input side.
10) - Mount the new fan following the reverse sequence of removal.

5 - FINAL CHECKS

- Switch the machine on and check for correct operation.

ROUTINE : **5.2**

NAME : VAR 321 thermoswitch replacement
DURATION : 0.5 hr
PREREQUISITES : The machine must be OFF

1 – TOOLS AND INSTRUMENTS

– Screwdriver 2.5 mm	P.N.	4355475 P
– Screwdriver blade 4 mm	"	4355313 N
– General purpose handle	"	7138485 B
– Soldering iron	"	7144451 X
– Solder	"	6138215 L

2 – PURPOSE

– To replace a defective thermoswitch on the VAR 321.

3 – PRELIMINARY CHECKS

– None.

4 – PROCEDURE

1) – Carry out steps 1, 2, 3, 4 and 5 of Routine 5.1.

2) – Remove the two screws fixing the defective thermoswitch group.

3) – Unsolder the two thermoswitch supply leads.

4) – Remove the two screws fixing the resistor and plate to the lid.

5) – Take out the thermoswitch plate and put in a new one(P.N.0842638 T).

6) – Replace the two resistor and plate to lid fixing screws.

7) – Restore electrical connections to the thermoswitch.

8) – Secure with the two screws the complete group to the fan group.

9) – Install the termoswitch back in its place following the reverse sequence of removal.

5 – FINAL CHECKS

– None.

6. MAINTENANCE AIDS